



Università degli Studi
di Roma "Tor Vergata"



Rheinische
Friedrich-Wilhelms-
Universität Bonn

Surface Physics of metals in Ultrahigh vacuum and in Liquids

Prof. Dr. Klaus Wandelt

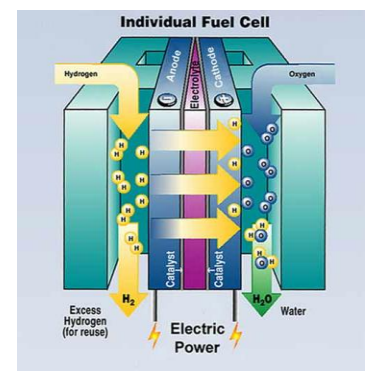
June 12 – July 5 : 10.00 a.m. - 12.00 a.m

Aula Paoluzi, Dip. Di Fisica, Univ. di Roma "Tor Vergata"

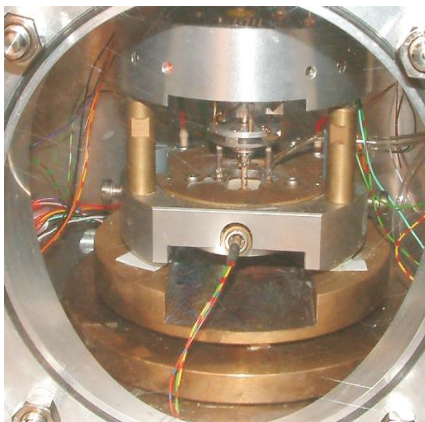
Processes at solid interfaces are of enormous technological importance. Large scale applications are e.g. galvanisation and passivation for corrosion inhibition; solar cells, batteries, fuel cells for energy storage and conversion, electro-catalysis and flotation.



Solar cells

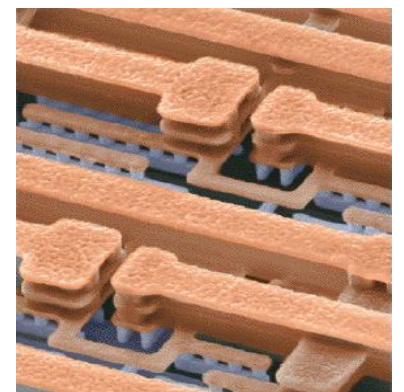


Fuel cell



ECSTM

Modern nanoscale integrated circuits are produced electro-chemically, by the so-called "Damascene process". Special coatings lead to super-hydrophobic and self-cleaning surfaces ("Lotus – effect").



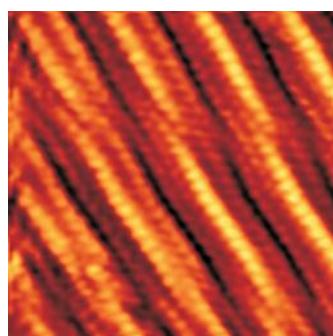
Integrated circuit

Understanding and optimization of these processes requires detailed fundamental research.

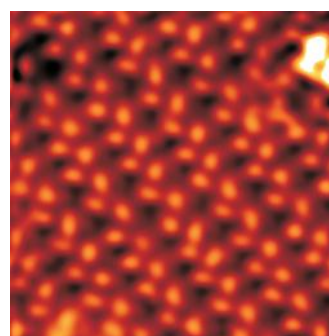
For instance, **ElectroChemical Scanning Tunneling Microscopy (ECSTM)** enables to study properties and processes also at solid/liquid interfaces with highest precision, even with atomic resolution.

This lecture gives an introduction into concepts, state-of-the-art methods and the current understanding of the scientifically exciting and technologically highly relevant research area of metal surfaces in vacuum and in contact with electrolytes.

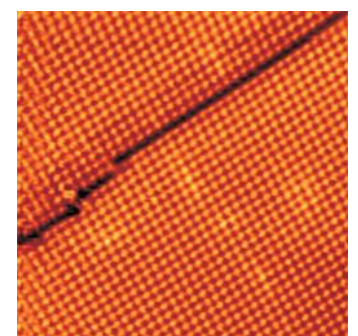
Here you see atomically resolved **Scanning Tunneling Microscopy (STM) images in solution**



Au(100) hex. rec.



HS-/Au(100)



S²⁻/1ML Cu/Au(100)